



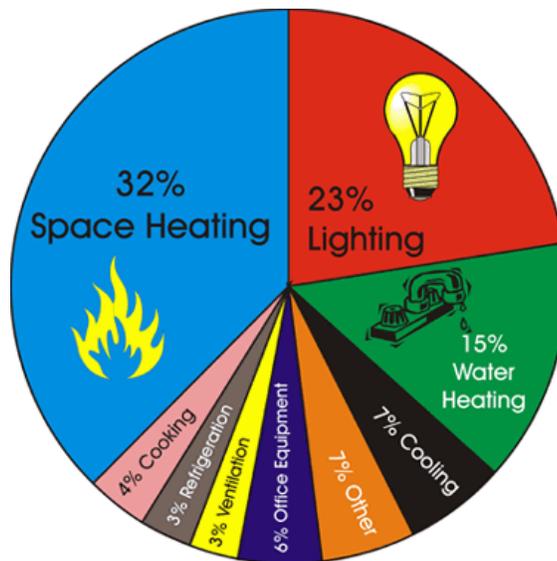
An Introduction to the ENERGY STAR® Program

ENERGY STAR Overview

Each year, the energy required to run buildings in the United States costs over \$200 billion. It also creates pollution--commercial and industrial facilities are responsible for 45 percent of the greenhouse gas emissions in the United States.

The goal of EPA's ENERGY STAR® program is to reduce greenhouse gas emissions by encouraging building owners to voluntarily implement profitable energy-efficiency improvements in their buildings.

Commercial buildings include a wide variety of building types—offices, hospitals, schools, police stations, places of worship, warehouses, hotels, barber shops, libraries, shopping malls, and more. These different commercial activities all have unique energy needs but, as a whole, commercial buildings use more than half their energy for heating and lighting.



Source: <http://www.eia.doe.gov/kids/energyfacts/uses/commercial.html>

The ENERGY STAR program provides plans for energy-efficiency upgrades in key areas, to maximize energy savings. Through these upgrades, your organization can expect to reduce total building energy consumption by more than one-third.

The **ENERGY STAR Challenge** is a national call-to-action to help improve the energy efficiency of America's commercial and industrial buildings by 10 percent or more. Use the Challenge Toolkit communications materials, available online, to learn about energy efficiency, find creative ways to communicate your commitment to energy efficiency, grow your participation with ENERGY STAR, and celebrate your success. Challenge participants and their members are encouraged to take as many of these actions as possible:

- Design commercial buildings to be energy efficient.
- Measure and track energy use
- Develop a plan for energy improvements
- Make energy efficiency upgrades
- Help spread the energy efficiency word to others.
- Become an ENERGY STAR Partner

The State of Ohio joined the Challenge in March 2005.

Become an ENERGY STAR Partner

By joining as an ENERGY STAR partner, you formally commit your organization to continually improving energy efficiency. Partners benefit from enhanced credibility and visibility through the ENERGY STAR program. To become an ENERGY STAR partner, you will sign a partnership letter with EPA, committing you to:

- Measure and track the energy performance of your organization's facilities where possible by using tools such as those offered through ENERGY STAR
- Develop and implement a plan consistent with the ENERGY STAR Energy Management Guidelines to achieve energy savings
- Help spread the word about the importance of energy efficiency to your staff and community
- Support the ENERGY STAR Challenge, a national call-to-action to help improve the energy efficiency of America's commercial and industrial buildings by 10 percent or more
- Highlight your achievements with recognition offered through ENERGY STAR.



In return, EPA agrees to do the following:

- Provide technical guidance and support throughout the implementation.
- Evaluate implementation results.
- Award the ENERGY STAR for top performing buildings.
- Provide public recognition of your efforts.

ENERGY STAR Partners who demonstrate continuous improvement across a portfolio of buildings, not just in a single building, may qualify for recognition as an ENERGY STAR Leader.

Existing Building Upgrades

To help you identify opportunities for improvement, the ENERGY STAR [Building Upgrade Manual](#) recommends upgrades take place in five stages. These stages provide the opportunity for profitable upgrades throughout your building and corresponding reductions in your energy costs. The potential savings from an integrated approach to energy-efficient upgrades can be 35% or greater.

In **Stage 1, Recommissioning**, you will conduct an examination of actual building equipment systems operation and maintenance procedures for comparison to intended or design operation and maintenance procedures. This capitalizes on heating, cooling, and electrical load reductions by continually monitoring energy consumption to optimize energy performance and savings.

In **Stage 2, Lighting**, you will be upgrading the lighting system to reduce excess heat and energy usage. Lighting consumes 25-30% of energy and is the largest source of “heat gain” in commercial buildings in the U.S. A well implemented efficient lighting plan can reduce HVAC loads and energy usage, while improving aesthetics for building occupants. Some recommended actions include replacing incandescent light bulbs with more efficient compact fluorescent bulbs, dimming lights during the day if possible, installing motion sensors, and turning lights off in unoccupied spaces.

Stage 3, Supplemental Load Reductions, involves reducing building loads. Supplemental load sources are secondary load contributors to energy consumption in buildings. Some typical supplemental load sources are people, computers, lights and the building itself. These loads can adversely affect heating, cooling and electrical loads. However, the effect of supplemental loads can be controlled and reduced through strategic planning and implementing energy efficient upgrades. Possible steps are upgrading ventilation settings, upgrading to ENERGY STAR qualified office equipment, and upgrading the building envelope with window shading and reflective roof materials.

ENERGY STAR Qualified Office Equipment Savings Estimated Annual Product Savings/Unit	
Large Copier (plus \$650 if double-sided copying feature is used)	\$130
Printer	\$40
Computer and Monitor	\$20
Fax	\$15
Source: Lawrence Berkeley Laboratories.	

In **Stage 4, Fan System Upgrades**, you will be downsizing your air handling system to match newly reduced loads by installing smaller energy-efficient motors and larger pulleys; converting constant air volume systems to variable air volume systems (where applicable); and installing variable speed drives to control fan motors and provide maximum efficiency at reduced airflow. The potential energy savings from rightsizing, energy-efficient motors, and variable speed drives is 50– 85%.

In **Stage 5, Heating and Cooling System Upgrades**, you will find that the reduced loads achieved in Stages 1 through 4 create the opportunity for substantial equipment cost savings on new, high-efficiency heating and cooling equipment—for example, a smaller, high-efficiency chiller (an upgrade that should be seriously considered as new laws mandating reductions in chlorofluorocarbons come into effect). You will also be installing variable speed drives to control chilled water pumps and condenser water pumps and improving boilers, cooling towers, and direct-expansion space-conditioning equipment.

Potential Cooling and Heating Estimated Energy Savings	
Cooling Central Chiller	15–35%
Unitary A/C	20–35%
Heating Boiler	10–30%
Furnace	5–25%
Adapted from: E Source, Space Cooling Technology Atlas and E Source, Space Heating Technology Atlas.	

Learn more at www.energystar.gov